

**What would you tell a traveller from overseas visiting Gold Coast?**









# What do tourists to Australia die of?

1. Motor Vehicle trauma. Most of world drives on wrong side of road. Come to Australia and look the wrong way

# What do tourists to Australia die of?

- MANILA - Two Filipina nurses were killed in a car crash in Australia recently, the Department of Foreign Affairs (DFA) said.
- The victims were on board a Dodge Journey that collided head on with a Toyota Land Cruiser driven by a 65-year-old man along a highway in Wallaroo, about an hour away from Canberra.

# What do tourists to Australia die of?

## 2. Accidental death

# What do tourists to Australia die of?

**Migrants and tourists account for a third of drownings in Australia: lifesavers want better education**

# Aim of this Talk

To help work out what information is important for travellers and to prioritise vaccines.

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**CTH from the ISTM**  
**Practicing travel medicine on Gold Coast for**  
**over 15 years.**  
**Part of Travel Medicine Alliance.**  
**No conflicts but I will be discussing research**  
**our national group has done/is doing.**

# Case based Talk

# Case 1

Older couple. Mid 70s. Safari Kenya.

He has had hip replacement.

She is on immunosuppressive medication for rheumatoid arthritis.

## Case 1

Large market in older travellers because they have money and are looking for experiences didn't get while young.

Usually short and upmarket

Except bird watchers – weird group.

# Yellow Fever

- The risk of vaccine complications clearly increases with age. Many itineraries have relatively low risk of disease. If the risk of disease is lower than the risk of the vaccine it is clearly medically not in the travellers' best interest to receive the vaccine. Since this risk is often unknown we are forced to give advice based on unclear data.

# Yellow Fever

- As you know the problem is yellow fever vaccination has a secondary requirement as an entry requirement in many countries if travellers are coming from a yellow fever country. This can be avoided in most tourist visited countries by a letter from a registered YF provider saying the vaccine is contraindicated in this traveller for this trip.

# Yellow Fever

- Reviews of Vaccine Adverse Events Reporting System data from the USA confirmed a higher rate of serious adverse reactions to the yellow fever vaccine in the elderly. Compared to vaccinees aged 25 to 44 years, persons aged 65 to 74 years experienced 5.8 times the rate of serious adverse effects and 3.5 times the rate of hospitalization or death.

# Yellow Fever

- Individuals 75 years of age and over experienced 18 times the risk of serious reactions and 9 times the rates of hospitalization or death compared to those 25 to 44 years of age.

# Yellow Fever

- Because certain people have an increased risk of developing a serious adverse event if vaccinated with yellow fever vaccine, vaccine is not recommended (i.e., contraindicated) for people with:
  - Allergy to a vaccine component
  - Age <6 months

# Yellow Fever

- Symptomatic HIV infection or CD4+ T-lymphocytes  $<200/\text{mm}^3$  ( $<15\%$  of total in children aged  $<6$  years)
- Thymus disorder associated with abnormal immune function
- Primary immunodeficiencies
- Malignant neoplasms

# Yellow Fever

- Transplantation
- Immunosuppressive and immunomodulatory therapies
- What about because they are old? Not according to CDC and USA but quite reasonable according to the Canadians.

# Yellow Fever

- The Canadians say
- If yellow fever vaccination is being considered only to comply with entry requirements at destination or transit countries (in the absence of risk of transmission), individuals over 60 years should be provided with an exemption certificate.

# Yellow Fever

- Kenya is a yellow fever risk country. No recent human cases but monkey disease is assumed to exist and have been human outbreaks just across western border with Uganda.
- Prefer they did safari somewhere else, Tanzania, Namibia, Botswana.
- She can not be vaccinated due to immunosuppression.

# Yellow Fever

- He doesn't want to be vaccinated because she is not but he is going to risk country and should be vaccinated.
- If lots of time she can stop medications for 1-6 months before and at least 1 month after but most travellers won't do that due to disease flare.
- Will still be trying to prevent YF by prevention measures.

# Yellow Fever

- How do we avoid giving YF vaccine to patient in whom it is contraindicated? 3 steps.
- We ask patients on arrival to write down all illnesses and medications then I ask verbally again and then nurse asks again and makes them read reasons can't have YF.

# Yellow Fever

- 2 recent patients 1 on Mab drug and another with chronic leukemia on no treatment did not tell us at first 2 steps so have to be very careful taking history before giving.
- Australian recently died after Zostavax with CLL so not just YF.

# Yellow Fever

- Don't like/believe in vaccines is not an indication for exemption nor is being a conscientious objector

# Does Australia have a YF entry requirement?

- Yes they send you straight to Manus Island if you don't have a YF certificate.

# Does Australia have a YF entry requirement?

- If you are arriving in Australia from a yellow fever risk country but do not hold a vaccination certificate you will still be permitted to enter Australia without one. On arrival in Australia, Department of Agriculture, Biosecurity officers will reinforce the seriousness of the disease to you and provide you with a Yellow Fever Action Card.

# Does Australia have a YF entry requirement?

- The card provides instructions on what you should do if you develop any symptoms of yellow fever in the six-day period following your departure from a yellow fever risk country.
- Commonly misunderstood by travel agents and GPs.

93 year old male I saw. Captains choice tour. Spending 2 nights in Amazon.

No history of previous YF vaccine.

Discuss risk of disease and vaccine.

**South America: 2 week exposure disease 5 / 100,000 death 1 / 100,000**

**Vaccine risk >70 years 7.5 / 100,000 of serious complication or death**

Going in dry season so risk is <5/100 000 for 2 weeks so <1/100 000 for 2 days in risk area and promised to be vigilant. No further travel planned to YF countries. His risk from the vaccine is considerably higher than any quoted because he is 93 years old.

He laughed at these risks.

He was part of a bomber crew in WW2 when he was 21

Prior to 1944, a crewman's tour of duty was set at 25 missions. As a measure of the hazards they would encounter, it is estimated that the average crewman had only a one in four chance of actually completing his tour of duty.

Apart from the absolute risk of the disease and complications from vaccination travellers have an inbuilt personal appraisal of risk influenced by life experiences and their underlying personality. I don't believe my job is to force things on travellers unless they are compulsory. I aim to make sure they understand the risks they are taking so they can make informed decisions.

He chose the exemption certificate.

67 woman with metastatic bowel cancer controlled on medication but life expectancy 12-18 months. Not booked trip but her bucket list was to go to Kenya on safari in the Masai Mara for 10 days. Clearly she qualified for a waiver but her family was telling her she absolutely should not go because the risk of YF was too high.

Discuss Tanzania but very insistent on Kenya.

**Africa: No known human disease activity in Kenya at that time.**

**Risk of disease 1.2-2.4 / 1,000 risk of death 0.2-0.5 / 1,000**

Less because going dry season and she was going to be vigilant about personal protection.

The other concern was insurance which I doubted she would be able to obtain for her cancer but she was happy to accept word of specialist that she was in remission and I agreed to give her a waiver.

## Case 2

Family of 5 going to live in Indonesia for 3 years because of mother's work. 2 children 17 and 15. Will be based in city but will visit other islands and countries of Asia. Oldest child had bad reaction to MMR so 2<sup>nd</sup> child not vaccinated against MMR.

Father will look for appropriate home childcare, cleaning and cooking and then he will be playing golf.

May try and fall pregnant during trip.

May do some volunteer work in poor areas.

## Case 2

I use 5 main reference sources

WHO International travel and health

CDC Health information for international travel

Manual of Travel Medicine – Australian reference book

The Australian Immunisation Handbook – best resource for catch up vaccination schedules

Travax.com commercial website – expensive but updates all disease outbreaks in countries and has nice malaria risk area maps

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WHAT'S NEW HIGHLIGHTS

[Central African Republic: Monkeypox in Mbaiki, Lobaye Prefecture](#)

According to WHO's regional office, 4 cases of monkeypox (including 3 laboratory-confirmed) have occurred since September 26, 2018, in Mbaiki, Lobaye Prefecture. More than 30 cases (including 14 laboratory-confirmed cases and 1 death) have been reported since early March 2018 in Mbaiki, Lobaye Prefecture; Bangassou, Mbomou Prefecture; and Bambari, Ouaka Prefecture. This is the third consecutive year that outbreaks have been reported

[Bangladesh: Significant Dengue Fever Increase, Mainly in Dhaka](#)

According to Bangladesh's Ministry of Health and press sources, approximately 2,900 cases of dengue fever (serotype 3) per month (a significant increase over average incidence) are being reported, mainly in Dhaka. More than 5,600 cases have been reported since July 1, 2018, almost exclusively in Dhaka and surrounding districts. The outbreak has yet to peak. Serotype DEN-3 had never been reported in Bangladesh. Travelers should observe

[United States: Consular Travel Warning](#)

Due to Hurricane Michael, Canada (GAC) advises reconsidering travel (or avoiding nonessential travel) from the border between Alabama and Florida to the Suwannee River, Florida. U.S. (DOS), U.K. (FCO), and Australia (DFAT) have no current warnings.

[Israel: Significant Measles Increase, Including in Jerusalem and Tel Aviv](#)

According to press sources, Israel's Ministry of Health is reporting more than 125 cases of measles per month (a significant increase over average incidence) throughout the country, mainly in the districts of Acre, Jerusalem, Petach Tikvah, Tel Aviv, and Tsfat. More than 480 cases have been reported since March 2018 (primarily in unvaccinated persons) in the aforementioned areas. The outbreak has yet to peak. Shoreland continues to make

[Thailand: Maya Bay to Remain Closed Due to Environmental Damage](#)

According to the Thai government, Maya Bay (Hat Noppharat Thara-Mu Ko Phi Phi National Park) will remain closed indefinitely due to sustained environmental damage. Travelers should not include Maya Bay in their travel plans.

[See all posts >](#)

Assume all basic vaccines are up to date except MMR. Hep A and Typhoid as per age requirements. 1 study our group has done is to show it is safe to give Vivaxim (combined hep A and typhoid vaccine) down to age 2 with only minor increase in local symptoms. Off label but parents are very appreciative

# Tuberculosis

Most common chronic infection in the world. Resistance patterns mean 4-5 antibiotics for 12-24 months to achieve cure. Most humans carry TB but don't transmit it. When erodes into airway very contagious until been on treatment for a while. Can we protect travellers?

# Tuberculosis

Risk is highest in unvaccinated child living in less developed country for more than 3 months. Particularly if close contact with poorer locals who may not have access to treatment.

Other risk is from household help. Recommend any person having long term contact with children is screened with CXR minimum.

# Tuberculosis

Most travellers protected by short contagious period. What about BCG? Long term shortage in Australia. Chest clinic only provides under the age of 5. Does not prevent acquisition of TB just spread to rest of body. Very important for young children. Need Mantoux test first - has to be read 2-3 days later then BCG but it is a live vaccine.

# Tuberculosis

Recent case reported in MJA of multidrug resistant case requiring 7 drugs for 2 years to achieve cure so value of BCG is increasing because of resistance patterns.

# Tuberculosis

BCG no lower age limit. Unknown efficacy - 0-80% is the quoted range - at preventing primary acquisition of TB but decreases spread of TB to rest of body from the lungs – brain, bones, kidneys, etc with 70% efficacy for up to 15 years.

# Tuberculosis

Since 2012 Australia has had shortages. In Brisbane public TB clinic there is a 6 month wait must be under 5 years of age and more than 3 months of exposure. Our clinic in Brisbane imports an alternative that is not licensed in Australia.

# Tuberculosis

If family believes significant exposure then can be tested on return – Mantoux skin test or Quantiferon Gold blood test. If they are positive but CXR and Urine testing are negative I refer to ID specialist as the argument for whether treatment of asymptomatic converters is worthwhile has no proven answer.

# Measles

The WHO has reported a 300% increase in measles cases with over 170 countries having outbreaks this year.

Strongly encourage 2<sup>nd</sup> child to have MMR. Much higher risk of acquiring disease OS than in Australia.

GCPHU told me some of recent cases in return travellers have had 2xMMR. Should we start testing for failure in travellers?

# Measles

All adults born 1966 to 1981 with no proof of 2<sup>nd</sup> vaccine or disease should also be vaccinated.

# Rabies

- 1-2 travellers from developed countries die of rabies acquired while travelling each year.
- Close to 1 billion travellers visit a country which has dog rabies each year
- Why discuss rabies with travellers?

# Rabies

- If you do nothing after a bite/scratch/lick to open wound from a rabid animal and you get symptoms rabies is 99% fatal
- So if you get bitten/scratched/licked to open wound by a dog or any terrestrial animal in a country that has dog rabies it is strongly recommended you have rabies treatment.

# Rabies

- Clearly we have to massively over treat potential rabies contacts to prevent 1 or 2 travellers dying from rabies
- Not usually possible for travellers to test animals for rabies
- 15 minutes rinsing - not scrubbing - wound with soapy water and apply viricidal antiseptic like betadine.

# Rabies

- HRIG preferably less than 24 hours after rabies contact given directly into wound
- 4 rabies vaccinations day 0,3,7,14 of vaccine from human diploid or chicken embryo cell lines
- HRIG must be given no later than 7 days after first vaccine or interferes with subsequent vaccines

# Rabies

- Australia uses Imogam from North America or Kamrab from Israel. Extracted from blood of vaccinated people.
- Equine rabies IgG ERIG - comes from India. Equally effective according to WHO but can cause allergic reactions.
- Risk is complicated for tourists where animal unlikely to have rabies. South Africa first usage of ERIG gave anaphylaxis.

# Rabies

- HRIG is unobtainable in most less developed countries and many countries do not have reliable vaccine either - China recent vaccine scandal dose too low. Philippines fake vaccine.
- Recently we had a male traveller evacuated by his insurance company to Australia from Mongolia to get HRIG because they could find no other affordable reliable source.

# Rabies

Countries like Australia stockpile HRIG then waste it on trivial monkey scratches from Bali. If you don't get HRIG there is a window where rabies virus can spread from the wound to the nerves before vaccine works.

# Rabies

Of human deaths from rabies 98% are believed to be related to dogs. Rabies was introduced to Bali in 2008 by a fisherman who bought a rabid dog from another island. Roughly 200 locals have died from rabies since - all from dog bites. No monkey has yet been diagnosed with rabies but it can happen.

# Rabies

- More than 120 tourists each day estimated to be bitten/scratched by monkeys.
- I have injected HRIG into a girl's scalp bitten by mother monkey. She was holding the baby.
- I also had to injected a young man's penis after it had been bitten through his jeans and had several stitches in Russia.



# Rabies

- Can get rabies vaccine at Denpasar hospital and BIMC but no HRIG until recently. All tourists meant to come back to Australia in <24 hours and get HRIG.
- If you have 3 rabies vaccines before trip only need 2 booster vaccines. Much easier to arrange and does not mean evacuating country.

# Rabies

- PrEP pre exposure prophylaxis.
- 3 xIMI vaccine roughly \$400 so \$1600 for family of 4
- 3xIDI vaccine half cost but requires blood test in Australia to confirm immunity

# Rabies

- Lasts forever in terms of not needing HRIG post rabies contact.
- Safe
- Takes 3-4 weeks
- Makes Public Health's life a lot easier as only limited amount HRIG in the world and Australia imports all it uses

# Rabies

- IDI vaccine requires training and you must be doing a lot as have to discard vaccine few days after opening
- They must be able to sit still and effectiveness drops over 50 years of age so suitable in 12-50 year olds.

# Rabies

- Do I recommend it for this family and who is most important.
- Young children are most important but all long term expatriates in areas where HRIG is not constantly and easily available should have.

# Rabies

- Problem is world wide shortage of rabies vaccine.
- Rabipur and Merieux not available so we are trying to import alternative but no idea of how long shortage will persist.

# Rabies

- New - India has registered the first monoclonal Ab for rabies treatment 2017. Mab can be generated in factory. Not sure if/when will be released in other countries but perhaps great for the future.

# Cholera

Unlikely outside visiting a disaster zone. Unproven efficacy for ETEC. I don't use it much personally.

# Mosquito borne diseases

Japanese encephalitis

Malaria

Dengue/chikungunya/zica

# Mosquito borne diseases

Don't get bitten in the first place!

30% DEET safe down to babies. Ingested >30% can be toxic in babies/toddlers so not on parents skin either if children suck on their skin.

Light-coloured clothes.

Screened or netted accommodation.

# Japanese encephalitis.

Rare but deadly disease. 2017 traveller in Phuket died of JE. 70 000 Australians go to Phuket every year. Newspaper report said traveller had numerous mosquito bites.

If not for tourism related activity Bali and Phuket would be farming islands. Rice paddocks run right up to tourist accommodation. All tourists are at risk.

# Japanese encephalitis.

2 vaccines

1. Imojev live vaccine, single dose, lasts 5-10 year. Not clear if booster necessary. Can be used to 12 months.
2. Jespect inactivated vaccine 2 doses 4 weeks apart lasts 1-3 years. Booster lasts longer. Registered 18 years and older but trials in younger children show it is safe.

# Japanese encephalitis.

Recommend if living 1 month or more in rural areas of Asia or PNG or long term urban expatriates.

I have seen arguments at international conferences about the cost-effectiveness of the vaccine given the rarity of disease.

# Japanese encephalitis.

The family should have as long term expatriates.

# Polio

- ▶ New recommendations from WHO March 2019
- ▶ If you have been in a country with transmission of disease Nigeria, Pakistan or Afghanistan for more than 4 weeks (resident or visitor) that country can require vaccine to leave that country 4 weeks to 12 months before leaving the country
- ▶ If you have been in a country with transmission of vaccine related polio vaccine PNG, Indonesia and Somalia for more than 4 weeks also should receive a single dose of IPV or OPV 4 weeks to 12 months before leaving the country

# Polio

- ▶ People visiting countries that have circulating vaccine related polio 2 DRC, Kenya, Niger, Nigeria and Somalia for more than 4 weeks should be encouraged to have a polio booster.
- ▶ CDC People who have been in risk countries for more than 4 weeks in last 12 months should also consider booster

# Polio

- ▶ Even though adult booster is for life may require every 12 months?
- ▶ Certificate should be similar to Yellow fever certificate with dates etc
- ▶ My concern is what if you go to Bali for 1 week then Uganda to see gorillas 4 months later. Are they going to start making you have polio vaccine?
- ▶ I am giving more IPV

# Dengue, Chikungunya, Zika

Day time feeding mosquitos

Aedes Aegypti

Aedes Albopictus

Widespread.

No vaccines except Dengvaxia currently.

# Dengue, Chikungunya, Zika

Dengvaxia is recommended for travellers who have had dengue fever once already NOT for traveller who has not had dengue fever or can have severe side effects.

Special access in Australia. Need absolute serological proof have had Dengue Fever.

# Dengue, Chikungunya, Zika

Direct testing of viral RNA while unwell is diagnostic and a change in titre is usually diagnostic.

Dengue called break bone fever acute, severe and often short. 4 types and 2<sup>nd</sup> infection can cause dengue haemorrhagic fever which can be fatal particularly young and elderly.

# Now they say don't want to go.

Forewarned is forearmed.

Ignorance is not bliss when it comes to overseas travel.

## Case 3

Couple early 20s going to back pack the world with no itinerary for 12 to 18 months. Leaving in 10 days. She had recent MMR as missed dose and LMO gave it to her. Will be starting in Peru and going to Amazon soon after arrival. Going to climb Kilimanjaro in 5 days because very fit.

# Yellow Fever

New rules re:vaccination.

Lifetime protection since 2016.

2 caveats certain rarely visited African countries still require every 10 years.

If visiting yellow fever outbreak with human cases and fatalities booster if more than 10 years.

# Yellow Fever

- Rio de Janeiro and Sao Paulo major SE Brazilian cities commonly visited by tourists. No outbreak for Over 20 years.
- 1000s of cases and 100s of deaths. 10 tourist cases 4 deaths.
- First outbreak 2017 government undervaccinated population and next outbreak 2018 worse.

# Yellow Fever

- Divide YF vaccine in 5. Only 4 providers in world. 6 months to grow. WHO major concerns re: outbreak Asia or USA

YF infection causes kidney and liver failure and bleeding. Fatality rate usually quoted as 30%.

Prevented building of panama canal until cause found.

# Yellow Fever

4 week separation from other live vaccine.

Measles 1 week ago, needs now for Amazon.

Original studies were concerning measles and smallpox vaccine – first interferes with efficacy of 2<sup>nd</sup>. Hard to find evidence MMR and YF. I give it and tell patient to repeat next trip to a YF country in case not fully active.

# Rabies

New WHO guidelines 2 vaccines vs 3.

This is off label in Australia but there have been numerous studies showing PEP after 2 or even 1 initial vaccine combined with good wound care is very effective.

# Rabies

April rabies WHO body said 2 dose PrEP could be used. Public Health Australia says that is for poor countries doing mass vaccination to save money which is true.

However 2 is much better than none and if don't have 3 weeks that is what I do. Recommend they get a 3<sup>rd</sup> dose when possible even if after trip.

# Tick Borne Encephalitis

They believe will spend 3 months trekking forests of Europe.

Cost, short shelf life. Special access scheme.

Make them pay before we order as hard to use before out of date.

Accelerated course is 2 doses 2 weeks apart.

# Tick Borne Encephalitis

UK recently has had first probable case and disease has been identified in ticks in UK so there may be some requests coming from people trekking forests of UK now as well.

# Opportunistic vaccination

Check list originated in aviation industry but now widespread in medicine.

I have a list of every vaccine possible and try and update any missing.

I test people who say haven't had chicken pox and roughly ½ haven't. We give a lot of MMR to adults on the Gold Coast.

# Opportunistic vaccination

Children from Nimbin who have had no vaccinations good opportunity as many are very keen to be vaccinated once 14 years old.

Many teenagers not had Meningococcal ACWY if not done at school. Qld only grade 10.

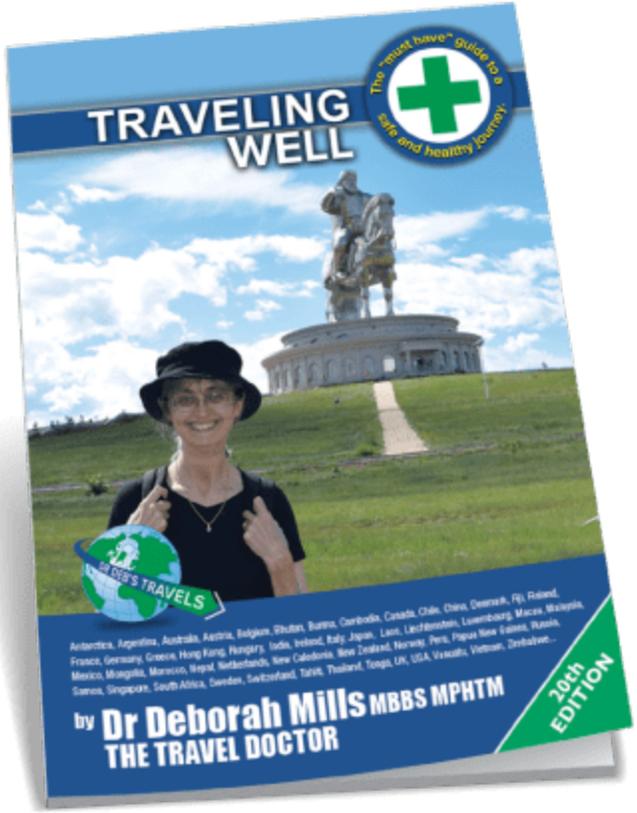
Meningococcal B worth considering as well.

## Give written information

Dr Deb rewrites travel guide for patients every 2 years.

Give a lot of information in a consultation and some form of back up is essential as patients won't remember everything and may need to remember it in 6 months.

Also comes as app.



# Summary

- Assess the trip and absolute risk of traveller getting a vaccine preventable disease and consequence of disease.
- Assess risk of vaccine particularly YF.

# Summary

- Often discussion comes down to cost, private insurance.
- Family of 4 - 10 days Bali Hep A, Typhoid, Rabies, JE cost well over \$2000.

**Questions?**